

PetCare: an application that fulfills the owner needs

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Abstract—Pets are the perfect companion for the daily struggles of our hectic lives. However, while having pets is a blessing to the pet's owners, maintaining a pet, especially maintaining several pets in a home, can become a heavy responsibility. It is also difficult to help pet owners to find owners of similar pets, in order to help their pets to socialize. The goal of PetCare is to help fellow pet owners in making their lives a bit easier. The methodology used in this project combines the Agile approach with User Experience (Agile+UX). The interviews were conducted to gain insights from the pets' owners to understand better for the system requirements. The application is developed using the flutter framework for the front end and firebase was used as the backend. Two testing techniques were applied to validate PetCare: black box and usability testing, which the latter was participated by nine pet owners.

Keywords—pets; pet owners; doctors; vets; component;

I. INTRODUCTION

As conscientious pet owners, we must ensure their health, stability and diet. Ensuring their health and welfare is one of our main responsibilities as pet owners. They require medical attention when sick, and regular trips to the veterinarian will ensure their proper health to continue helping us by just being there. Our pets, like us, can get sick and need medicine. Their health will directly co relate with ours, if they do not lead a healthy life, it is quite impossible to maintain our health as well. At the forefront of pet healthcare, the animal health sector is constantly developing new products to ensure that our pets lead comfortable and healthy lives. This covers immunization, deworming, treatments for fleas and ticks, dental care, and skincare. It is a must that whenever any family decides to adopt a pet, their first duty will be to vaccinate their pet against serious illnesses such as rabies, hepatitis, parvovirus or leptospirosis in dogs. Anti-parasitic medication is essential if you want to avoid more visits to the vet. Making sure that they are free from any parasites will not only guarantee that your pet is healthy, but it will also mean that you are free of fleas, worms, and ticks as well [1].

The duty of a pet owner is not only limited to vaccinations and treatment of a pet. As a pet owner, we also must keep in

mind the responsibility that comes with the job. Pets require constant observation and a routine feeding schedule. So, an untimely meal may ruin the eating cycle of a pet which may lead a pet to become obese or anorexic. Pets, as our companions, also can fall prey to negligence if we do not spend time with them or play with them. Many breeds of dogs, as well as cats, also thrive on daily walks, play times and exercise, without which they may become prone to depression, stress, as well as aggression and loss of inhibition. A variety of problems arise when we look at the pet owners trying to take care of their pets. As mentioned before, taking care of a pet is a responsibility. No matter what your pet is you have a responsibility to feed it in time, making sure the vaccinations are given on time, all the supplies are restocked etc. But in our hard and bustling life we barely get the time to take care of ourselves let alone our pets. As a result, it becomes very difficult to take care of our pets properly.

Another problem most pet owners face is the regular check-up that our pets need, to make sure that their immune system is vitalized and healthy. In addition to these there's also a fear of rising expenses while taking care of a pet. Since the present world is mostly dependent on their smartphones for almost all their daily needs, an application which focuses on the health and wellbeing of our pets will be a welcomed addition. This study aims to develop a mobile application which will allow users to become better pet owners and make sure that their pet is living a healthy lifestyle. The application will also allow young children to learn responsibility and assess the way they treat pets around their houses.

II. BACKGROUND AND RELATED WORK

In order to find the best and most appropriate applications to be discussed, the research has been carried out with the selected applications. The aim of this process is to identify existing systems and how they can be enhanced to provide a better user experience for the pet owner. Smartphones have completely changed the way we interact with things around us. It has given us the flexibility to multitask even through the most stressful times. As mentioned in the previous chapter, people nowadays have become too overwhelmed with everything around them to solely focus on their pets. As a result, the proposed application

will assist users by making sure their pets are well taken care of. This includes the basic needs of a pet such as feeding them on time, keeping them vaccinated, restocking their supplies when necessary. This will greatly improve the health and wellbeing of the owner's pet.

In addition, it is very common to see young children lose interest in taking care of pets once they are done playing with them. The proposed system will allow kids to be vigilant when it comes to taking care of their pets thus making them more responsible. In addition, in order to provide a better outcome and to approach a broader audience, the application has to be available for all users to use. Through this we can judge changes in markets and how it will affect the development of the application when implemented.

To better gain insights on what are currently being offered in the market concerning pet care applications, the two applications; 11pets [2] and MyPets [3], were chosen based on the number of downloads on Google Play. The general and common complaints for the applications was the execution of the applications. They were full of bugs and both the applications' user interfaces were subpar at best. As a result, it was intriguing to dive and look at the reasons why the users were unsatisfied with these applications.

11pets is an application which offers most of the features that consumers look for when it comes to an application like this. It compiles the basic needs such as a grooming schedule, a vaccination reminder, expense trackers, etc., in an application which is simple to use and navigate. Fig. 1 is the default page that the applications open to once the pet has been added. It shows the necessary information and needs of the pet. It also gives us an idea about the health of the pet at a glance. Information such as bath time and other grooming details also pop out on the screen. This screen allows the user to browse through the medical records of their pets. They can also check up on their upcoming appointments.



Figure 1. 11pets default page.

MyPets, is an application which is very similar to the 11pets application. Even though they are similar in a lot of aspects, they differ on the user interface and experience. Mypets is a very visually unpleasing application. It features a very unintuitive home screen with not nearly as many functionalities as 11pets. Fig. 2 shows the home screen for MyPets. MyPets showcases a very intuitive and bland home screen which shows the necessary information about the user's pets. But the application is completely unpolished and very bug prone in some cases. The application has a vaccination tracker and a health tracker for pets which is a given when it comes to applications such as these. Other than that, the app is very limited in functionalities and features.

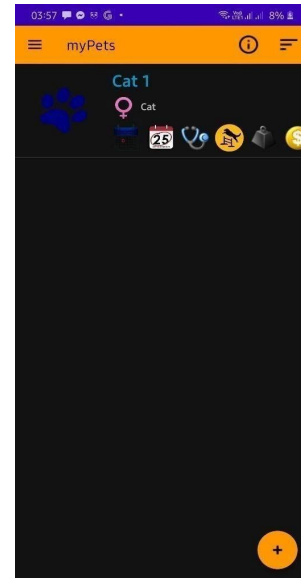


Figure 2. MyPets interface application.

When we looked at both the applications, we can clearly see a lack of functionality and lack of a community-based focus in terms of pet care. Animals generally stay healthier when in contact with other animals as a result socializing with other pets can vastly improve the health of any pet. This is one of the biggest problems that PetCare will aim to solve.

III. METHODOLOGY

Agile+UX brings together the product with Agile software development and combines it with user experience design. In order to efficiently produce working software, agile goals are established. Collaboration and communication are emphasized to streamline the process. While integration with the UX helps us to define the user's needs and to conduct user reviews. User experience is considered a part of the ongoing process, always seeking to better understand the user's needs which will help the developer to select, design and produce products that best suit their needs. It clears the users' doubts and brings forth meaningful changes based on their needs and requirements. There are four phases involved during the period of the project, which are listed as follows.

A. Requirements Collection

During this phase, a selected group of 15 people were recruited where they were provided with a questionnaire and based on that an interview took place. During the interview, the participants were questioned based on their needs and desired functionality they expect from such application. Since face to face interviews have become difficult to conduct considering the COVID-19 restriction, these interviews were done through the phone. The questions of the interview were based around cat owners as the scope of our project is still limited to cats.

The interviewees were mostly cat owners in Skudai, Johor Bahru. The focus was primarily on cat owners that were mostly students and working professionals. Every interviewee was given a questionnaire for them to fill up regarding the experience of owning a pet.

B. Design

The application was designed putting the user experience as the top priority. The site map was first laid out which was followed by low fidelity prototype to help us to visualize the needs and demands of our stakeholders.

C. Implementation

The aim of using Agile+UX is to bring forward an iterative approach to the design, along with improvement of features being built through the collaboration of teams. This project combines Agile methodology together with UX design, resulting in Agile + UX. It integrates UX practice with Agile software development teams.

D. Testing

The aim of this stage is to ensure that any problems present have been solved in the previous stages of development. For our application we have chosen black box testing as it will help us to find bugs in our software. For the produced application to meet user requirements and ensure the system's quality, the testing process is essential. Although it is difficult to entirely eradicate flaws from the system, the developers focus on looking into and identifying any issues with all the functions and then applying the knowledge they have learned to address them as much as possible.

IV. SYSTEM REQUIREMENTS AND DESIGN

The main issue that was found in terms of taking care of their pet was the lack of time that pet owners usually have. Since most of the interviews were working professionals, they did not have the time to give sufficient attention to their pets. As a result, a lot of the pets felt neglected. Table 1 illustrates the functional requirements identified for this application, while Fig. 3 shows the use case diagram.

TABLE I. PETCARE FUNCTIONAL REQUIREMENTS

ID	Functional Requirement
FR001	New PetCare users shall be able to create a new account for their pets using their Google ID
FR002	Users shall login using Google account to set reminders on their Google calendar
FR003	Users can add a list of their food supplies

ID	Functional Requirement
FR004	System shall send a notification to the user's phone reminding them to restock food supplies
FR005	Users shall be able to set vaccination schedules for their pets
FR006	Users shall be able to add, edit and delete health records for their pets
FR007	The users shall be able to appointments with health professionals for their pets
FR008	The system shall notify the users on upcoming vaccine shots
FR009	The system shall track the health and progress of the pets
FR010	The system will notify users about pet events around their area

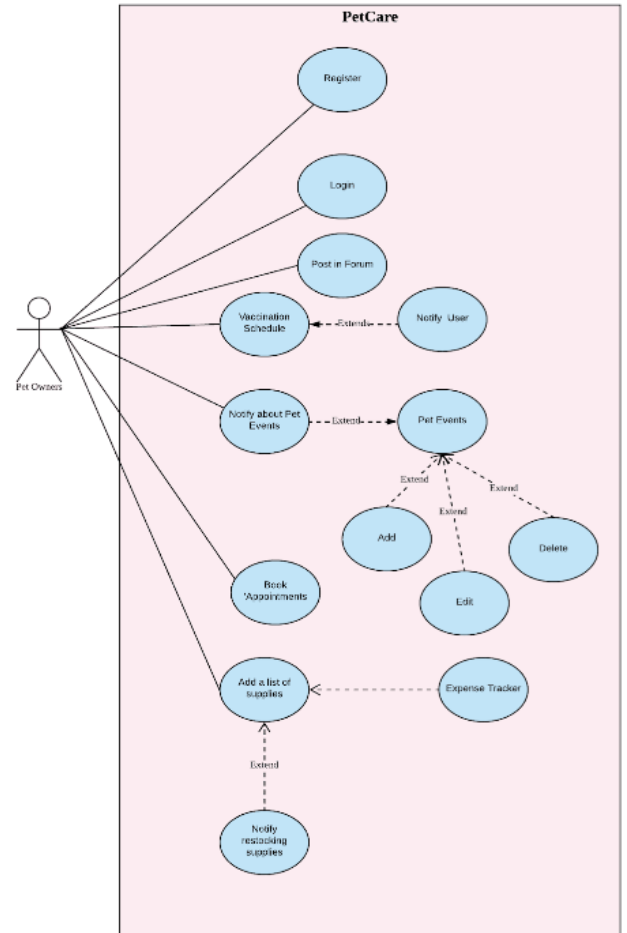


Figure 3. PetCare use case diagram.

The Model-View-Controller (MVC) [4] has been selected as the system architecture of PetCare. As MVC is chosen as the system architecture the application will be separated into three layers namely Model, View and Controller. Model is used to interact with the database whereas View is used to display the system data to the user. While Controller is the recipient of inputs from the user which will be forwarded to the model. Through the help of Fig. 4 the system architecture of PetCare is illustrated.

A good interface is essentially one that looks good and is easy to use. To achieve this, the user interface is designed to be simpler and more consistent throughout the product to avoid user confusion, and the information or content, should be clear logically arranged. Fig. 4 illustrates the site map.

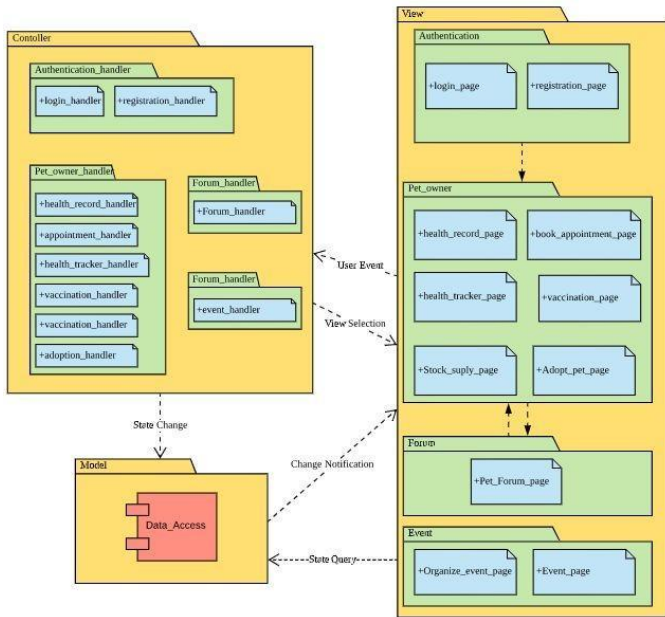


Figure 4. PetCare use case diagram.

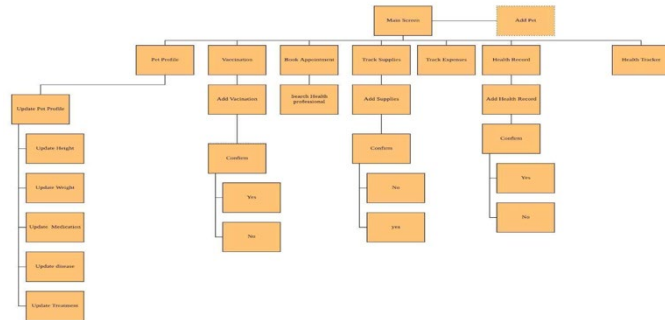


Figure 5. PetCare design site map.

V. TESTING RESULTS

The two testing methods used for PetCare are black box testing and usability testing.

A. Black box testing

Black box testing is a software methodology that tests system features without having knowledge of the system's code structure or operational procedures. The focus of behavioral testing is on the program's input and output in accordance with the requirements and specification of the software. The focus of behavioral testing is on the program's input and output in accordance with the requirements and specification of the

software. In other words, in addition to evaluating the software's quality, it also looked for inconsistencies and flaws in functional specifications. The test cases created with valid or incorrect data to ensure that the anticipated outcomes can match the actual results to detect any discrepancies with the pledged criteria. Additionally, the test case included requirements and test data to guarantee that the tester understood how to produce the feature's intended outcome. The coverage of black box testing is 100% coverage, where all test cases were executed, and all of them are passed.

B. Usability testing

A representative group of 10 pet owners volunteered in the usability testing. They were asked to first explore then tried to use the application to perform several tasks featured by PetCare. Results of the testing are in Fig. 6.

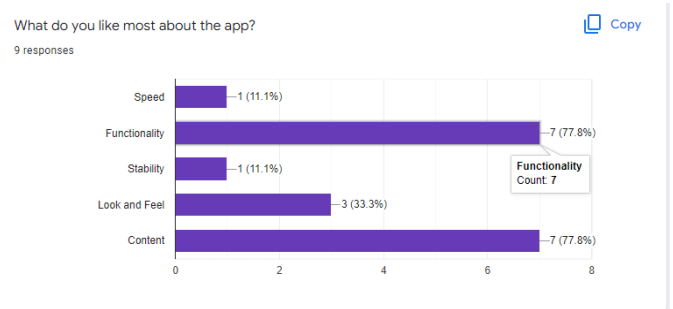


Figure 6. PetCare rating scale for most liked features

VI. CONCLUSION

PetCare was successfully developed to address the lack of features of pet caring applications, and to fulfil the needs of the pet owners. The acceptance of the application was well received as evidenced from the evaluation. The project is expected to grow in size and scope through deployment and progressive development. The build procedures for our application will be revitalized by this facilitating access to a huge user base. More resources are already being put into the Forum module and the veterinarian section in preparation for future developments. The functionality of the app will be many times better as a result, making it more beneficial for both pets and owners.

ACKNOWLEDGMENT

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